

MAY 03 1965

Regional Director, Bureau of Sport Fisheries  
& Wildlife, Portland, Oregon

April 27, 1965

Refuge Manager, Medicine Lake Refuge,  
Medicine Lake, Montana

Spring run off report - Medicine Lake Refuge - 1965.

Our spring run off has now been completed with the exception of a slight flow from the Big Muddy Creek.

Our earlier fears of a damaging run off were not borne out though the threat had been very real. Our soils were dry over winter and our spring thaw was 'slow and easy'. Consequently, nearly the winter's accumulation of moisture went into the ground. Water moved in all of our watersheds though in only light amounts. No water was allowed to pass on downstream from the refuge as it was all needed in our impoundments. A complete account of the times and amounts of the various flows is to be found in the Diverted Water Use Report for the month of April 1965.

Refuge Water Levels

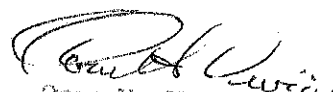
Water Area	Over winter Level	Approved Oper. Level	Level as of Apr. 23, 1965	Dev. from Oper. Level
Medicine Lake	1941.04	1943.00	1942.10	-0.90
Homestead Lake	1936.22	1937.65	1937.56	-0.09
No. 10	1943.43	1945.00	1944.40	-0.60
No. 11	1950.24	1951.54	1951.32	-0.32
No. 12	1952.30	1954.00	1953.32	-0.68
Katy's Lake	1952.30	1954.00	1953.32	-0.68

No damage occurred to any refuge facilities as the result of the spring run off and there was no flooding of lands other than those in the impoundments.

The two dams on Sec. 8, T32N R58E received no water again this year and consequently are dry. Reed's and Merganser Ponds (Sandhills) were both filled to near operational level. Beaver Pond was filled to spill capacity. All other check dams and artificial ponds were only partially filled. Potholes in the refuge area were about half filled and will probably soon be dry.

All in all the refuge fared well on the water situation and will be in excellent condition to receive the hoped for spring rain run offs.

The ice is just now going off our impoundments (over two weeks late) and the ranges are beginning to 'green up'.

  
Owen H. Vivion

MEDICINE LAKE NATIONAL WILDLIFE REFUGE  
MEDICINE LAKE, MONTANA

ANNUAL WATER PROGRAM - 1965

UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE

45273  
1965

MEDICINE LAKE NATIONAL WILDLIFE REFUGE  
MEDICINE LAKE, MONTANA

ANNUAL WATER PROGRAM - 1965

1. Source of Supply

Run-off water from the unusually heavy May rains entering the refuge through Lake, Cottonwood and Sand Creeks was the major source of water for the Nos. 12 to 9 impoundments, Katy's Lake and Gaffney's Lake. Revival of underground spring activity during late summer and fall was a minor source of water but did bring partial relief to the dwindling water supplies and reversed the constantly lowering gauge readings in Nos. 12 to 10 impoundments and Katy's Lake. Water in surplus to maintain operational levels in these units was released to storage in Medicine Lake.

Big Muddy Creek, an intermittent drainage flowing out of Muddy Lake in Saskatchewan, Canada, provided about 1/2 of the water stored in Medicine Lake - the remainder came out of the Lake Creek drainage through No. 9 impoundment and Gaffney's Lake. All water flowing from the north in Muddy Creek was diverted into Medicine Lake via Structure No. 1 and the Diversion Canal.

Run-off water from Sauerkraut Coulee and Wolf Creek drainages lying to the northwest of the Homestead Unit, supplied the bulk of the water utilized in the Homestead Lake. Lost Creek draining the water shed east of Homestead Lake produced only small amounts of water. Sheep Creek entering the unit from the southeast flowed heavily during most of the season.

2. Type of Rights

The Bureau of Sport Fisheries and Wildlife through filings posted and recorded in 1936 and 1937 holds Appropriative Water Rights on five drainages. These rights are summarized as follows:

Water Rights Filing No.	Source	Amount of Water Right C.F.S.	Acres under Water Right
233163	Cottonwood Creek	100	3,640
233164	Sand Creek	75	3,640
233165	Lost Creek	25	840
233166	Sheep Creek	20	750
233167	Lake Creek	100	3,640
233168	Big Muddy	50	1,600 Homestead Lake
233169	Big Muddy	1,200	2,000 Medicine Lake

Refuge water use records extend back to June 1936.

### 3. Purpose of Use

All appropriated waters were used for flood control, water conservancy, irrigation of marshes to produce wildlife food and habitat, disease control, and storage to satisfy late season water demands of the above.

### 4. Season of Use

Water usage on the refuge was on a year-round basis with the heaviest use occurring between late March and early November.

### 5. Quantity Used

All refuge water units were overfilled by the run-off water received in May and June. As the season progressed impoundment water levels were gradually lowered by transpiration, evaporation and seepage. Roughly 45,273 AF of water were used in the No. 12 to Medicine Lake water units - 5,533 AF were released downstream from the refuge. About 15,824 AF were taken into the Homestead Lake Unit and 15,863 AF were released. Detailed reports of the 1965 water usage was reported on Form 1 Hyd-F-103.0 and is summarized as follows:

<u>1965 WATER USE SUMMARY</u>				
<u>Source</u>	<u>Water Right</u>	<u>Area of Use</u>	<u>Volume</u> <u>Max Flow CFS</u>	<u>AF</u>
Cottonwood Creek	233163	11 to 9 impoundments, Gaffney's & Medicine Lake	61	1,825
Sand Creek	233164	10 to 9 impoundments, Gaffney's & Medicine Lake	158	3,899
Lost Creek	233165	Homestead Lake	48	499
Sheep Creek	233166	Homestead Lake	50	7,069
Lake Creek	233167	12 to 9 impoundments, Gaffney's, Katy's and Medicine Lake	90	2,728
Big Muddy	233168	Homestead Lake	122	8,278
Big Muddy	233169	Medicine Lake	880	36,821
Total A.F. of water taken into Main Unit		45,273		
Total A.F. of water taken into Homestead Unit		15,846		
Grand Total		61,119 A.F.		
Released from Medicine Lake			180	5,533
Released from Homestead Lake			240	15,863

6. Place of Use

The forgoing "Water Use Chart" also summarizes the place of use of all waters appropriated during the 1965 season.

With Regional Office approval, Homestead Lake was drawn down 18 inches below approved operational level by July 1 in an effort to relieve the severity of the usual botulism-algae poisoning outbreak.

7. Adequacy of Supply

All water for the refuge was derived from run-off or spring activity - no live streams enter or may be diverted to the refuge. Consequently the bulk of the season's water arrived with a rush in the spring. With the advent of dry summer weather, the water supply dried up and the impoundments lowered. Summer rains provided limited amounts of water this season and some strong spring activity was recorded in both Lake and Sheep Creek drainages from August to November.

The supply of water during the spring nesting season was greatly in surplus to needs and our ability to divert. Though no physical damage was sustained by the refuge, flood waters destroyed the bulk of our mallard and pintail duck nestings and threatened the goose nesting in 12 to 9 impoundments. Throughout the remainder of the season the water supply was not adequate to maintain operational levels in Biological Units I and II but were adequate to operate the Homestead Lake - Biological Unit III.

The following chart lists the monthly levels in all units for the 1965 season.

MONTHLY RECORD OF GAUGE READINGS - 1965

IMPOUNDMENT	No. 4*	No. 6*	Katy's Lake	No. 10	No. 11	No. 12
<u>PRESENT</u>						
<u>OPFR. LEVEL</u>	<u>1943.00</u>	<u>1937.65</u>	<u>1954.00</u>	<u>1945.00</u>	<u>1951.54</u>	<u>1954.00</u>
January	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen
February	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen
March	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen
April	1941.44	1936.92	Frozen	Frozen	Frozen	Frozen
May	1942.34	1937.65	1953.32	1944.56	1951.64	1953.32
June	1943.16	1937.20	1954.55	1946.53	1952.18	1955.26
July	1942.90	1936.70	1954.10	1945.11	1951.90	1954.10
August	1942.43	1935.99	1953.94	1944.63	1951.43	1953.94
September	1941.98	1935.89	1953.49	1944.20	1951.07	1953.49
October	1941.82	1936.36	1953.54	1944.13	1951.14	1953.54
November	1941.65	1936.04	1953.56	1944.01	1951.16	1953.56
December	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen

All gauge readings as of the first of each month.

\* No. 4 - Medicine Lake

\* No. 6 - Homestead Lake

Deficiencies in the various water levels at winter freeze-up time over the 1960 - 65 period are compared in the following chart. The figures are not entirely accurate since there are no accurate measurements of impoundment capacities.

DEFICIENCY IN ACRE FEET AS OF DECEMBER 1

*Spring runoff year = 61*

IMPOUNDMENT	1960	1961	1962	1963	1964	1965	1966
Medicine Lake	8,352	14,790	8,352	8,352	17,000		12,230
Homestead Lake	442	2,112	1,318	1,800	1,800*		2,400*
Katy's Lake	Full	320	262	224	600		140
No. 10	2,123	1,859	671	319	1,700**		860
No. 11	653	493	230	102	400		426
No. 12	372	1,383	335	471	1,000		231
Total	11,942	20,957	11,168	11,068	22,500		16,237

\* Water released for disease control and marsh management  
 \*\* Unauthorized water release - vandalism.

8. Recommendations for 1966

There is no indication that any difficulty will be encountered in filling all water units to operational level during the 1966 spring run-off. About 16,300 acre feet of water are required to bring all impoundments up to operational levels and an average spring run-off produces some 25,000 acre feet.

The following suggestions are offered for manipulation of water on the refuge during the 1966 season:

1. Current approved operational levels be continued for 1966.
2. Approved operational levels to be attained as early in the season as conditions permit and all levels be maintained as long as the water supply and disease conditions will permit.
3. Operational level of Homestead Lake be reduced 1.5' to the 1936.15' elevation by July 1 to continue disease control experiments. This lower level to be retained into freeze-up time to facilitate trash fish removal from the lake and assist marsh management work during the winter period.
4. Water in excess to that needed to maintain operational levels in Biological Units I and II and in surplus to the holding capacity of Medicine Lake be flushed through the Homestead Unit (Biological Unit III) to assist with disease prevention in that unit.

5. Medicine Lake proper is recommended to be drained as much as possible in the late fall of 1966. This draining will be done after the majority of waterfowl have migrated south and before major freeze-up. The early part of October is the most likely time to start the draining. Medicine Lake can not be completely drained because of the spillway No. 4 elevation. Medicine Lake will drain to about one-half of its size compared to approved water levels.

This draw-down is to reduce the carp infestation and to improve the main lake's productivity of aquatic vegetation. This draw-down will allow the water remaining in Medicine Lake to freeze to the bottom and thereby reduce most of the carp population. Also drawdowns have proven beneficial to the sago pondweed and other aquatic plants. Waterfowl use on Medicine Lake was greatly improved on the east and west sides after a draw-down that was done several years ago.

Medicine Lake will be refilled in the spring of 1967 by run-off water. During most years there is more than enough water to fill all lakes on the refuge. However, there is a possibility that we will have a below normal run-off and Medicine Lake will not be completely refilled. If this did happen it would not adversely effect our waterfowl program. Actually it probably would be better to dry Medicine Lake for 12 consecutive months, but because of the public recreation area we would prefer to refill the lake in the spring.

6. The following water use priority is proposed.

Unit	Main Purpose	Priority
Katy's Lake	Nesting and Rearing	1
No. 12 Impoundment	Nesting and Rearing	1
No. 11 Impoundment	Nesting and Rearing	1
No. 10-9 Impoundment	Storage and Rearing	2
Gaffney's Lake	Storage and Rearing	2
Medicine Lake	Storage	3
Homestead Lake	Nesting and Rearing	1



8. Recommendations for 1966

We have no recommendations for the 1966 season other than to hold all water entering the reservoir until the spillway elevation is attained; any water in excess to this amount will be spilled on downstream from the refuge. We cannot control the reservoir water elevations nor forecast the amount of spring and summer run-offs that will enter the reservoir.



LAMESTEER NATIONAL WILDLIFE REFUGE  
WIBAUX, MONTANA

ANNUAL WATER PROGRAM - 1965

1. Source of Supply

Spring run-off water entering the reservoir via Lamesteer Creek is the entire source of water for the Lamesteer Reservoir.

2. Type of Rights

A "Notice of Appropriation of Water" claiming 427 acre feet of water of Lamesteer Creek was posted on June 30, 1938, over the signature of Wilbert A. Rodgers, Administrative Assistant, Bureau of Biological Survey, as authorized agent for the Secretary of Agriculture. The fact of posting was recorded in Book 6 of Miscellaneous on page 345 in the Wibaux County Recorder's Office, Wibaux, Montana, on July 16, 1938.

3. Purpose of Use

During the 1964 season all appropriated waters were used for flood control, water conservation, propagation and feeding of waterfowl, and for irrigation as called for in the "Notice of Appropriation of Water".

4. Season of Use

Water usage on the refuge is on a yearlong basis with the heaviest demands being made during the ice free period of March through November when evaporation and transpiration rates are the greatest.

5. Quantity Used

Most of the water received this year resulted from the heavy rains of May and June. The run-off from these rains overflowed the reservoir. By the first of November the reservoir was still within three feet of being full.

6. Place of Use

All appropriated waters were used within the boundaries of the SW $\frac{1}{4}$  of Sec. 14 and all of Sec. 15, T12N, R6OE of Montana Principal Meridian, Wibaux County, Montana.

7. Adequacy of Supply

Except for the May-July period, the water supply for the reservoir was inadequate to maintain a full reservoir and did not supply the appropriated water rights.

8. Recommendations for 1966

We have no recommendations for the 1966 season other than to hold all water entering the reservoir until the spillway elevation is attained; any water in excess to this amount will be spilled on downstream from the refuge. We cannot control the reservoir water elevations nor forecast the amount of spring and summer run-offs that will enter the reservoir.

Submitted: \_\_\_\_\_

Ruth Wien  
Refuge Manager

Date: \_\_\_\_\_

November 22, 1965

Approved: \_\_\_\_\_

Date: \_\_\_\_\_

# MEDICINE LAKE NATIONAL WILDLIFE REFUGE

## ROOSEVELT AND SHERIDAN COUNTIES, MONTANA

SCALE  
0 1 2 3 4 MILES  
PRINCIPAL MERIDIAN

